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First record of *Strix huhula* Daudin, 1800 (Strigiformes, Strigidae), Black-banded Owl, from the savanna–dry forest ecotone in northeastern Brazil

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Abstract

Strix huhula Daudin, 1800 is widely distributed species of owl in the Neotropical region. However, this species is considered rare in nature due to its dependence on forested habitat and low adaptive capacity to survive in anthropogenic environments. There are scattered records throughout Brazil. Here, we provide the first record of *S. huhula* in a savanna–dry forest ecotone in Piauí state. This expands the geographic distribution of *S. huhula* to northeastern Brazil.

Keywords

Deforestation, Cerrado–Caatinga ecotone, geographic distribution, Neotropical birds

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Introduction

Strix huhula Daudin, 1800, Black-banded Owl, is a forest bird with a wide distribution in the Neotropical region. There are two recognized subspecies: *S. h. huhula* Daudin, 1800 found from eastern Colombia and the Guianas to Amazonian Brazil and adjacent states as well as in Maranhão and Piauí states (Holt et al. 1999), and *S. h. albomarginata* Spix, 1824, which is restricted to the Atlantic Forest in Brazil, eastern Paraguay, and northeastern Argentina (Holt et al. 1999). Although it has a wide geographic distribution, *S. huhula* is naturally rare and Brazilian records are scattered (Gonzaga and Castiglioni 2004; Motta-Junior and Braga 2012). This owl species inhabits varied vegetation types throughout its geographic range. *Strix huhula* is a strictly nocturnal species which usually nest in dead tree trunks. Its diet is essentially carnivorous, consisting mainly of beetles, cockroaches, grasshoppers, and small vertebrates such as rodents, reptiles, birds, and bats (Sick 1997; Holt et al. 1999). However, its natural history remains poorly known (Bodrati and Cockle 2013).

The tropical forests of South America form ecotone areas where the Amazon Forest, Neotropical savanna

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(hereafter Cerrado), and deciduous, thorny, dryland vegetation (Caatinga) intersect in north-central Brazil (Sousa et al. 2009). An extensive ecotone in the Parnaíba river basin features a distinctive climatic complexity that influences the distribution patterns of bird species (Gonçalves et al. 2017). In fact, this region harbors a large diversity of bird species (Reiser 1910; Hellmayr 1929; Novaes 1992; Santos 2004, 2008; Guzzi et al. 2012; Olmos and Albano 2012; Santos et al. 2012; Silveira and Santos 2012; Araujo and Silva 2017; Soares et al. 2017). However, there are no records of *S. huhula* in the ecotonal areas of north-central Brazil. Thus, we present the first record of *S. huhula* from the savanna–dry forest ecotone (hereafter Cerrado–Caatinga ecotone) in Piauí state, northeastern Brazil.

Methods

We recorded the *S. huhula* in the municipality of Jardim do Mulato in the mid-west region of Piauí state, northeastern Brazil (Fig. 1). Here the vegetation type is predominantly composed of palm *Attalea speciosa* Mart. ex Spreng. (hereafter Babaçu palm forest), within the Cerrado–Caatinga ecotone. The climate is tropical rainy monsoon, with an average annual temperature above 26 °C and an annual rainfall between 1,300 mm and 1,600 mm (Alvares et al. 2013). Our sampling was opportunistic. First, the lead author (LMSS) heard a suggestive call of *S. huhula* coming from a Babaçu palm remnant. The following day, he recorded a call with a digital recorder (Sony PMD010) coupled to a unidirectional microphone (Sennheiser ME66/K6) during an informal walk along the edge of a forest remnant. This recording was used as a playback, which allowed for confirmation of approximately two individuals of the species. Our recordings are archived on the Xeno-canto platform (https://www.xeno-canto.org/).

Results

***Strix huhula* Daudin, 1800**

Figures 1, 2

New records. BRAZIL – **Piauí** • Jardim do Mulato, Zé Ferreira community; 06°09′22″S, 042°40′09″W; 160 m alt.; 19.VII.2018; L.M.S. Soares obs.; sighting and vocalization; 1 adult ♀, 1 adult ♂, XC487765, XC487768.

Identification. We identified *S. huhula* by a set of remarkably diagnostic features which include: length of about 40 cm; body all black and finely barred with white; bill and legs yellow; eye blackish brown. These characters are clearly detailed by Erize et al. (2006), van Perlo (2009), and Schulenberg et al. (2010). We also recorded a call low-pitched "hoo hoo hooo HOOOO", which allowed us to compare it to information Erize et al. (2006) and other sound recordings available on the Xeno-canto platform.

Discussion

In northeastern Brazil, *S. huhula* had been recorded in the Amazon and Cerrado domains of Maranhão state (Paraense Emílio Goeldi Museum MPEG76945; XC428572; Oren and Roma 2011), and in the Cerrado domain of in Piauí state (Reiser 1910). Additionally, there are two unpublished records from Piauí (WikiAves 2021), one from Ribeiro Gonçalves town (Dourado 2017) and another from Uruçuí town (Brito 2019). The Uruçuí record is the closest to our new record (ca. 250 km). There are also unpublished records of *S. huhula* from the Atlantic Forest and Cerrado domains in Bahia state (WikiAves 2021).

The Zé Ferreira community is dominated by small-scale farming that includes family-based agriculture and extensive livestock and by large companies producing soybean, *Eucalyptus* sp., and other monocultures. These anthropogenic pressures on the Babaçu forest are increasing and may drive local extinction of sensitive species. Unsurprisingly, the deforestation of tropical forests is the primary cause of global biodiversity decline (Hoffmann et al. 2010; Dirzo et al. 2014), and deforestation and biodiversity loss is even more worrisome in the Brazilian Atlantic Forest, where some bird species depend on forest environments and have a low tolerance to anthropogenic pressures (Banks-Leite et al. 2014). For the forest-dependent *S. huhula* (Araujo and Silva 2017), which is currently categorized as Least Concern (BirdLife International 2016), deforestation may potentially be found to alter shelter sites and nesting behavior. Selective logging is common in the area we surveyed.

Our results show that new surveys are fundamental to filling gaps and gaining a better understanding of the distribution of *S. huhula* in ecotonal areas, especially in the Cerrado and Caatinga, where seasonal water deficits can be extreme. The new record highlights the importance of protecting Babaçu forests from deforestation in order to conserve remaining bird populations, including those of *S. huhula*, which we believe are locally at risk of extirpation. We emphasize the need for studies on population dynamics of *S. huhula* to aid in conservation actions of this species in the Parnaíba river basin.

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Authors' Contributions

Formal analysis: LMSS. Investigation: LMSS. Visualization: LMSS, ABS. Writing – original draft: LMSS,

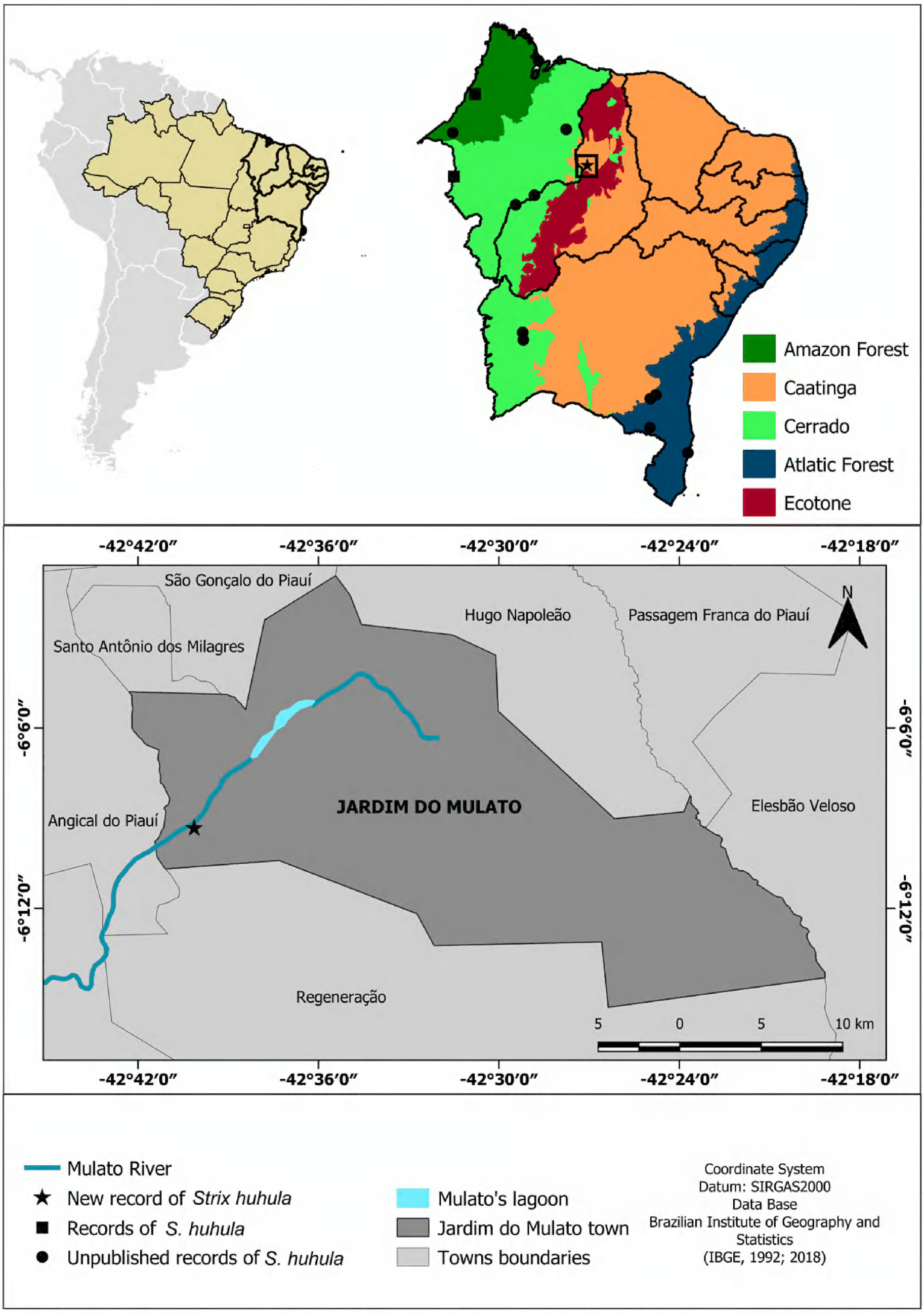

Figure 1. Location of the first record of *Strix huhula* Daudin, 1800 from the savanna–dry forest (Cerrado–Caatinga) ecotone in Piauí state, northeastern Brazil.

Figure 2. Babaçu palm forest, where two individuals of *Strix huhula* were recorded.

ABS. Writing – review and editing: LMSS, WMSS, AG, ABS.

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